Karsten Knese

Curriculum Vitae

robotics engineer with a strong profession in clean code development
seeking new challenges to enable autonomous devices with artificial intelligence
passionate and goal oriented team player

#Robotics, #Middlewares, #ROS, #Controls, #C++, #Python, #Bazel, #CMake

EDUCATION

2011 - 2014 **Master of Science (M.Sc.) - Robotics, Cognition, Intelligence**
Technische Universtität München (TUM), Germany

2012 - 2013 **Graduate Student Artificial Intelligence and Robotics**
Korea Advanced Institute of Science and Technology (KAIST)

2007 - 2010 **Bachelor of Science (B.Sc) with Honors - Applied Computer Science**
University of Cooperative Education Baden-Württemberg in combination of
Karlsruhe Institute of Technology (KIT)

EXPERIENCE

2021 - now **Intrinsic Innovation LLC, former Google X, an Alphabet company** ↗
- Responsible for Intrinsic's hardware abstraction layer (HAL)
- Architect real-time interprocess commmunication middleware up to 3khz
- Onboarding of external hardware components into Intrinsic's platform

2016 - 2021 **Research and Technology Center, Robert Bosch LLC** ↗
- Robotics research engineer for industrial manipulation
- Middleware expert for various distributed systems at Bosch
- Representative for ROS 2 Technical Steering Committee

2016 - 2021 **Open Robotics** ↗
- Joint position for collaboration between Bosch and Open Robotics
- Designing and developing the second generation of ROS
- Author and architect of ROS 2 lifecycle nodes, rosbag2, ros2-control

2015 - 2016 **EOS Innovation, Paris, France (no longer active)**
- In charge of full stack software from low level controller to build farm
- Mobile robot for warehouse surveillance based on mutli sensor SLAM

2014 - 2015 **Softbank Robotics, former Aldebaran Robotics, Paris, France** ↗
- Perception team, working on Softbank's humanoid robots (NAO and Pepper)
- In charge of people detection and tracking with multi sensor fusion
- Emotion detection algorithms for interacting with humans

2013 - 2014 **Internship - PAL Robotics S.L. Barcelona** ↗
- Full body motion controller for PAL's humanoid Robots (REEM and REEM-C)

RESEARCH & PROJECTS

M.Sc. Thesis	"Realizing Online Self-Collision Avoidance Based on Inequality Constraints with Hierarchical Inverse Kinematics" 📄
B.Sc. Thesis	Evaluation and Implementation of an Accounting-Solution for a Private Cloud with Eucalyptus 📄
Talk	ROSCon 2019 - "A true zero copy RMW implementation for ROS2" 🇻
Talk	ROSCon 2018 - "Hands-on ROS 2: A Walkthrough" 🇻
Talk	ROSCon 2017 - "Using ROS 2 for Vision-Based Manipulation with Industrial Robots" 🇻
Project	Dynamic Hand Gesture Recognition for Controlling Computer Applications with OpenCV and Python ▶
Project	Human Computer Interaction through Microsoft Kinect, Computer Vision and Impedance Control ▶
Project	Implementing Bioloid Robot for Walking and Stair Climbing ▶

EXTRA CURRICULUM - OPEN SOURCE

2016	**Developer for ROS 2** 🔗 Designing the second generation of ROS, a DDS based middleware with core layers in C and language bindings in C++ and Python
2014	**Maintainer for ROS & NaoQI packages** 🔗 C++ and Python bridges to integrate NaoQi driven robots into a ROS environment
2014	**"Stack-of-Task", CRNS-LAAS, Toulouse** 🔗 C++ control framework for real-time redundant manipulator control

LANGUAGES

German	native proficiency
English	full professional working proficiency
French	professional working proficiency
Spanish	basic knowledge

HOBBIES

Handball

Guitar & Drums

Traveling

Tinkering